

Subject: Mathematics

Grade: Second

Standard: #7 Measurement and Estimation

Key Concept: Students estimate and measure using standard and nonstandard units.

Generalization: Estimate and measure distance.

Background:

Students should already know units for measuring length, e.g. inches, feet, yards, centimeters, and meters.

This lesson is tiered in *process* according to Howard Gardner's *Multiple Intelligences*.

Tier I: *Bodily-Kinesthetic Learners*

Students, in groups of four, use footsteps as a measure, to estimate the number of steps: for the length of the teacher's desk; for the length of the blackboard: from one wall in the classroom to the opposite wall; for the perimeter of the classroom; from the classroom door to the restroom; and from the classroom to get outside. Using an actual footstep, students determine the measurement of each distance. Finally, students use an appropriate measuring device (ruler, yard stick, tape measure) to determine the actual distance in the U.S. measurement system and the metric system.

Tier II: *Musical Learners*

Students, in groups of four, use a regularly metered song such as "Farmer in the Dell", the "Alphabet Song", or "Baa Baa Black Sheep", as a measure, to estimate the number of beats: for the length of the teacher's desk; for the length of the blackboard: from one wall in the classroom to the opposite wall; for the perimeter of the classroom; from the classroom door to the restroom; and from the classroom to get outside. Using an actual taping of the song, students determine the measurement of each distance. Finally, students use an appropriate measuring device (ruler, yard stick, tape measure) to determine the actual distance in the U.S. measurement system and the metric system.

Tier III: *Logical-Mathematical Learners*

Students, in groups of four, use a chart prepared by the teacher which has at least four items measured using an unusual item, such as an eraser, new piece of chalk, or the student's math text. Using the unusual item, student's estimate the number of items: for the length of the teacher's desk; for the length of the blackboard: from one wall in the classroom to the opposite wall; for the perimeter of the classroom; from the classroom door to the restroom; and from the classroom to get outside. Finally, students use an appropriate measuring device (ruler, yard stick, tape measure) to determine the actual distance in the U.S. measurement system and the metric system.

All tiers prepare a chart which compares their estimates with the actual measurements. Each group shares their results with the whole class. The teacher conducts a group discussion of the similarities and differences.

Assessment:

The teacher checks to see if the students were able to accurately determine the measurements using the nonstandard and standard units. You may also want to assess their ability to organize and present the data.